TABLE NO | | |

STUDENT ID NO | | | | | | | | | | |

MULTIMEDIA UNIVERSITY

SUBJECT CODE _____

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2016/2017

TSE3351 – SOFTWARE EVOLUTION AND MAINTENANCE

(All sections / Groups)

19 OCTOBER 2016
2:30 pm – 4:30 pm
(2 Hours)

Question	Mark
A	
B	
C	
D	
Total	

Examiner 1 Signature: _____

Examiner 2 Signature: _____

Examiner 3 Signature: _____

INSTRUCTIONS TO STUDENTS

1. This question paper consists of 9 printed pages (including cover page) with 4 Sections only.

2. Attempt **ALL** questions in **SECTION A, SECTION B, SECTION C and SECTION D**. The distribution of the marks for each question is given.

3. Please write all your answers **CLEARLY** in the specific answer box provided for each question. Submit this question paper at the end of the examination.

Answer ALL questions in SECTION A, B, C and D.

Section A

HouseMaker system is the combination of a small mobile robot and a GUI (Graphical User Interface) that makes such robots ideal for housework. People start using them just like home appliances: a cooking robot, a vacuuming robot, and so on. They also have new home appliances that can move around the open environment – for example, a robot that brings them their coffee every morning or moves items according to their instructions. Other examples might be an automatic book-shelf or cupboard that organizes its contents, movable trash bins that collect rubbish around a room as scheduled, and a self-making bed.

Based on the above scenario, answer the following questions Q-A1 to Q-A4:

A1. Describe FOUR factors that determine the usefulness of the HouseMaker software system. Explain why the HouseMaker application that is used in a real-world environment must change.

(3 marks)

Continued...

A2. Explain FOUR factors with reasons why each of them can initiate the modification of the above HouseMaker software system.

(2 marks)

A3. Changes made to the HouseMaker software system can be categorized into FOUR categories. Explain briefly the FOUR categories of software change.

(2 marks)

A4. List THREE guidelines in selecting maintenance measures for the above system.

(3 marks)

Continued...

Section B

B1. What are the THREE factors that caused variation in documentation between programming tools?

(3 marks)

B2. Describe the TWO roles of software documentation in configuration management.

(2 marks)

Continued...

B3. Explain THREE ways how software documentation can act as a guide to software maintenance personnel.

(3 marks)

B4. Explain TWO factors that prevent organization to undertake domain analysis.

(2 marks)

Continued...

Section C

Many efforts to improve an Android device's boot time are based on the suspend-resume (SR) approach, which is essentially a power-management method to restore an image from information stored in additional memory after the system terminates. The information includes memory, task state, and device drivers. Methods typically use SR to optimize boot time, or an SR variant that reuses a single saved system snapshot, but both of these approaches often have limitations.

As such, the fast boot, fast shutdown (FBFS) approach ensures the restored state is synchronized with the state in external memory. FBFS resolves both the snapshot imaging and synchronization problems, and still significantly decreases startup and shutdown times relative to other optimized SR methods. This works against the demand for fast startup, a critical feature for most Android device users who have come to rely on quickly activating their cell phones as a geographical positioning system (GPS).

Based on the above scenario, answer the following questions C1 to C4:

C1. Why correct use and functioning of the above GPS system are important?

(1 mark)

C2. Do you think that it is necessary to implement modifications for the above GPS as the software system evolves? Why? Please provide TWO reasons.

(4 marks)

Continued...

C3. A software maintenance framework consists of SIX components: User environment, Organizational environment, Maintenance, Process & Personnel, Software, and Operational environment.

C3(a) Draw the software maintenance framework showing the relationship between the SIX components.

(2 marks)

C3(b) These components interact with each other based on THREE types of relationships. List the THREE types of relationships.

(3 marks)

Continued .....

Section D

D1. List FIVE objectives of reverse engineering.

(2.5 marks)

D2. What is the difference between forward engineering and reverse engineering?

(2 marks)

Continued...

D3. Explain THREE benefits that the achievements of the reverse engineering can bring.

(1.5 marks)

D4. List at least EIGHT benefits that can be derived from software reuse.

(4 marks)

End of Paper